PTO GENERAL GUIDELINES

New information: click here to see the bulletin

- The Dodge Ram 3500/4500/5500 Chassis cab models equipped with diesel engines that have the PTO prep option (LBN) have the capability of mounting and controlling a PTO.
- The gasoline powered models do not have PTO capability.
- The Aisin AS68RC Automatic transmission can use devices up to 35 HP and 130 ft-lbs torque. Chelsea 270 or 252 series fit this transmission. Muncie CS6 series fit this transmission. There is no difference in how PTO and pump mount between 4x2 and 4x4 automatic models.
- The G56 manual transmissions are limited in power output only by the PTO manufacturers' maximums. Chelsea 442 (deep mount) series fit this transmission, however on 4x4 models this PTO is very close to the front driveshaft . Muncie Alpha series fits this transmission.

Pump sizes

- The automatic transmission models have been test fit with 17 GPM rated size single pumps and tandem 11 GPM rated pumps. While these larger pumps have limited clearance to the exhaust system and many people have mentioned this as a concern, it should be noted that the exhaust pipe in the PTO area is a double walled pipe which provides significant heat insulation properties. In fact, in our extreme heat PTO testing in over 100 degree F Fahrenheit temperature we never exceeded 200 degree F on the PTO, pump or hoses.
- The manual transmission models are as follows: The 4x2 models have no particular packaging limitations with respect to direct mount pumps. The 4x4 models are limited by the location of the front driveshaft to approximately a standard 11 GPM rated pump (although larger pumps may have been successfully fitted in the field). However, some customers have had success using bent axis piston pumps (mounted forward) to get substantially higher flows.
- If you have specific PTO and pump fitment questions and can provide the actual PTO and pump combination, we can test fit it and provide pictures and instructions on how to install your specific combination.

PTO Limitations

Please read this information carefully and call us with any questions before you order a vehicle so you understand the specific capabilities of our PTO system.

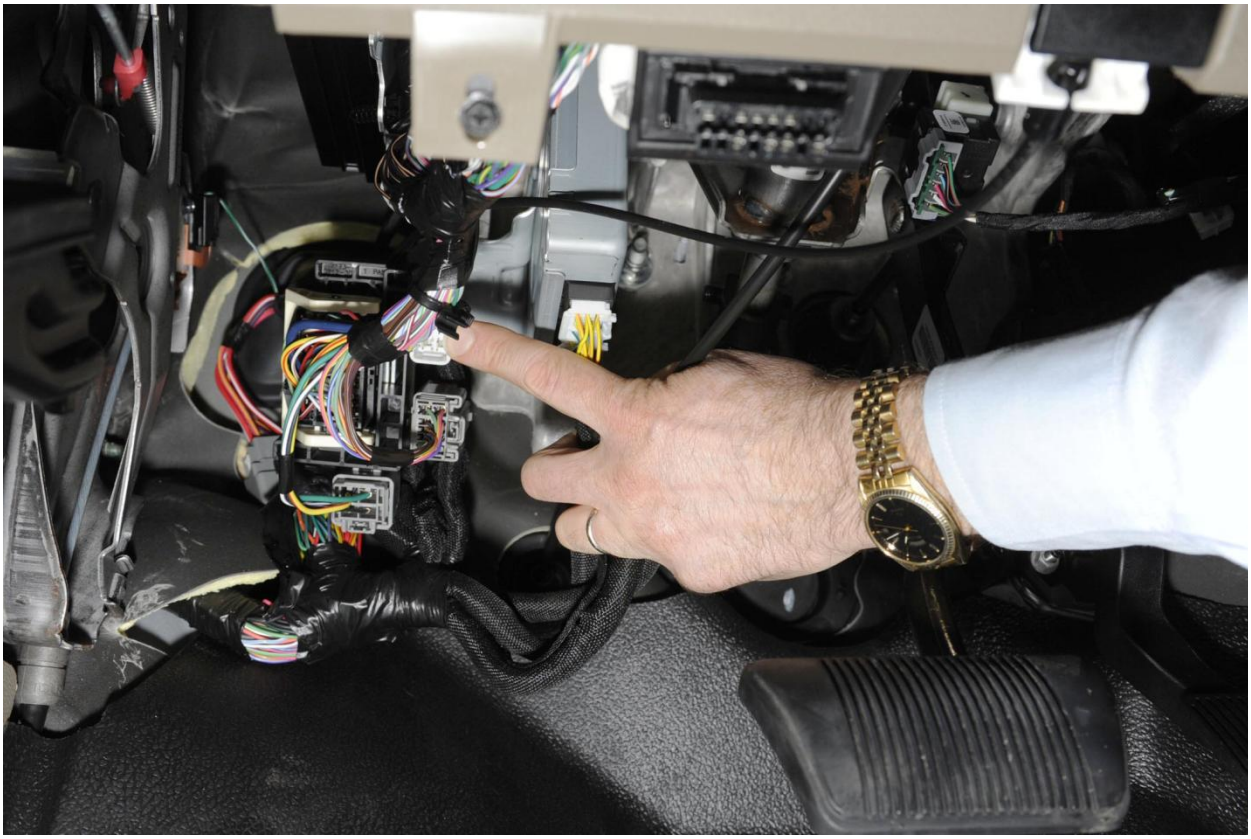
- The Automatic transmission PTO is turbine driven not engine driven. What this means is that the PTO will work only with the stationary mode in park, or in mobile mode with the vehicle moving at approximately 7 mph and above or in neutral. Because of this the PTO system is not a suitable system for vehicles like: snow plows, autoloader wreckers, or dump trucks if they are used to dump and spread at a crawling speed. These vehicles are more effective with an engine driven 'clutch pump' type hydraulic pump. Alternatively, Parker-Chelsea makes a product called Stored Energy Management System (SEMS) that allows such applications to function.
- The size and package space do not allow for components driven by a driveshaft from a PTO on our trucks. The automatic transmission models have exhaust system components in the way that cannot be relocated because it will effect emissions compliance. The manual transmission models have either the transfer case (4x4) or the transmission crossmember in the way.
- The manual transmission has the capability to support a split shaft PTO. The automatic transmission model does not support a split shaft PTO because the transmission cannot be held in direct drive gear.

PTO Quick Start Information

This section will give you specific instructions on how to wire a PTO on the 2011 and2012 3500/4500/5500 models. The information is tailored toward those familiar with PTO installation on the 2007 to 2010 but can be equally helpful to anyone installing a PTO.

Wire Locations

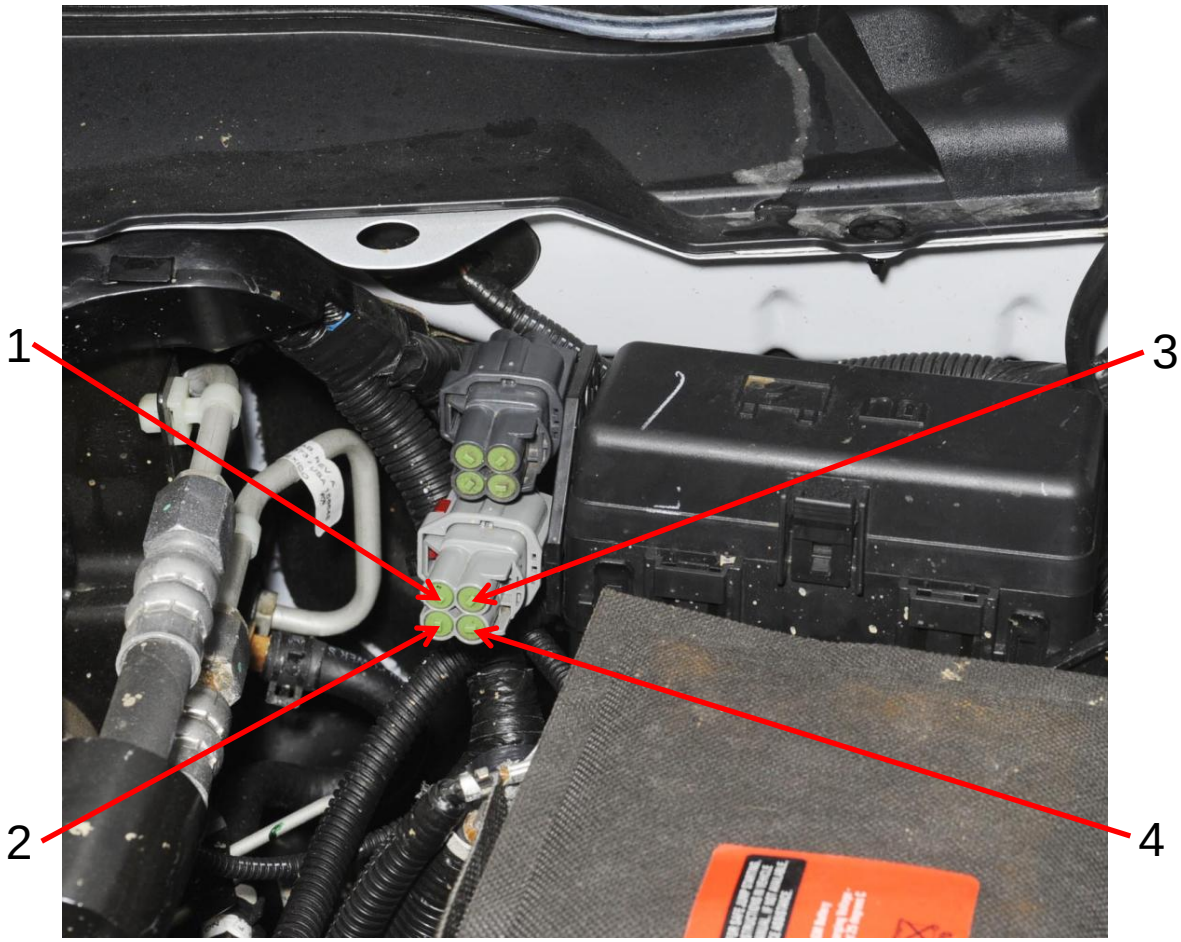
The white connector under the dash contains the following connections.



1. K425 (Orange/brown) PTO (non remote) switch. Connects to V937 to put the vehicle into PTO mode.
2. V937 (Violet/brown) PTO switch return.
3. F425 (Pink) Remote PTO switch. Connects to V937 in place of F425 if remote or learned single set speed is needed.

The mate to this connector is the smaller black connector that comes in the upfitter kit plastic bag.

The larger gray connector in this bag connects to a mating connector to the left of the white connector in the photo above. Use this connector to provide you circuit F922 (Pink/yellow). This typically used for 12V+ ignition feed power for the PTO indicator light.



The light gray connector under the hood shown in the figure above (below the dark gray connector) behind the auxiliary PDC contains the following connections. The Pin numbers below are molded into the surface of the connector. The wires that plug to this connector are also in the upfitter kit plastic bag.

1. K427 (orange/light green) This wire, when connected to the mating K427wire on the next page, will cause pin 2 to have 12 V output.
2. F928 (pink /tan) Switched 12 v output that connects to the hot shift solenoid.
3. Z907 (black/brown) ground
4. G 425 (violet/yellow) PTO indicator light feed. This wire connects to the PTO pressure switch and feeds through the dash to the gray under dash connector mentioned above.

Behind and below the auxiliary PDC are the following two (of five wires in 2012) wires coming out of the main wiring harness.

The figure above shows these two wires after they are uncoiled and extended from their as shipped position. Also the ends will be terminated with black heat shrink wrap. It may be necessary to unclip the auxiliary PDC from its bracket and rotate it slightly forward to gain easy access to these two wires.

1. K427 (Orange/ Lt. Green) connects to the mating K427 connector in 1 of the light gray connector.
2. T 754 (Dark Green/Grey) Hard wired remote start wire. See hard wired remote start instructions at this link. http://www.rambodybodybuilder.com/2012/docs/cc/adssi.pdf

PTO Operation

The 3500/4500/5500 Ram Chassis Cab vehicle, when equipped with either the automatic Aisin 6spd or manual G-56 6spd transmissions, will allow for an aftermarket upfit with a transmission driven PTO (power take off). The customer will have the ability to operate the PTO in either a "stationary" or "mobile" mode. The vehicles will be factory set to the "stationary" mode. In order to select the "mobile" mode a Chrysler Group LLC Dealership is required to modify the vehicles settings using their proprietary Dealer service tool. Under normal operation the vehicle will go to a 900 rpm when PTO is engaged. By utilizing the cruise switches the idle speed can then be adjusted to between 900 and 2000 rpm's.

Stationary Mode

This feature interacts with the transmission to utilize an auxiliary shaft to drive equipment. Activated by a switch inside the cab, this feature operates only when the vehicle is stationary. The input is switched to ground.

Once active, the engine speed increased by holding the RES ACCEL button on the steering wheel or decreased by holding the COAST button.

Stationary PTO is available only when the vehicle is stationary. When the truck is equipped with an automatic transmission, it must be in Park and the service brake must be released and functional. When the truck is equipped with a manual transmission, the Parking Brake must be Set and the service brake must be released and functional.

To operate the PTO in this mode the vehicle must meet the following conditions:

- Be in "park" position (vehicles equipped with automatic transmission)
- Upfitter provider (on/off) switch has been activated
- Parking brake applied (vehicles equipped with manual transmission)
- Clutch not depressed (clutch interlock switch)
- Vehicle must be running
- No transmission, engine, accelerator, brake or clutch switch faults present
- PTO must be correctly installed using the vehicle provided circuits

The customer has the choice to operate the PTO by utilizing the cruise control switches or by utilizing a remote control (provided by the PTO supplier). To operate the feature using the cruise control switches the customer must first activate the up fitter provided on/off switch. The vehicle is now in the PTO mode and is ready for use. In order to

increase or decrease the engine idle speed, to optimize the PTO function, the "accel" and "decel" cruise switches can be used respectively.
To disengage PTO operation and return to "standard vehicle operation" simply turn the up fitter provided on/off switch to the off position.

To operate the PTO via a remote switch the customer must make sure the above conditions are met. It is vital for proper operation that the PTO and remote have been installed correctly paying special attention to ensure the vehicle provided wiring has been connected properly. This is the responsibility of the installer of the PTO and switches/remote system. It is the responsibility of the PTO manufacturer to ensure that their electrical (switches and remote) system is compatible with the vehicle's electrical architecture and software functionality.

Mobile Mode

This feature interacts with the transmission auxiliary shaft. The feature is activated by a switch (closed to ground) in the cab after selected by a service tool. When active, this feature limits engine speed and road speed to calibrated values.

When this feature is selected stationary PTO and Remote PTO features are not available.

To operate the PTO in this mode the vehicle must meet the following conditions:

- Dealer selected "mobile" mode activated via Dealer proprietary service tool
- Upfitter provider (on/off) switch has been activated
- Vehicle must be in "park" or "drive" position (vehicles equipped with automatic transmission)
- Parking brake must not be applied
- Clutch not depressed (clutch interlock switch)
- No transmission, engine, accelerator, brake or clutch switch faults present
- Vehicle must be running
- PTO must be correctly installed using the vehicle provided circuits

The customer may choose to use the PTO while the vehicle is moving. To do so the PTO function must be activated prior to taking the vehicle out of "park". This is accomplished by activating the up fitter provided PTO on/off switch. At this point the customer may place the vehicle in a forward or reverse gear and have PTO operation.
To disengage PTO operation and return to "standard vehicle operation" simply turn the up fitter provided on/off switch to the off position.

Remote Stationary mode

This feature interacts with the transmission to utilize an auxiliary shaft to drive equipment. Activated by a switch outside of the cab, this feature operates only when the vehicle is stationary. The input is switched to ground.

Once active, the engine speed is changed when the switch changes from Off (open circuit) to On (closed to ground) or toggled in less than ½ second. Toggling the switch On-Off-On triggers the engine to change to the next calibrated engine speed. This can be repeated for up to five engine speed settings. Repeated toggles cycles through the engine speed 1-2-3-4-5-1-2 and so on.

Remote PTO can be calibrated for one to five selectable engine speeds. The engine speeds are also calibrated.

Remote PTO feature has a higher priority than Idle Up. If the Remote PTO feature is active the Idle Up switches are ineffective. The Idle Up or Stationary PTO feature cannot be activated until the Remote PTO relinquishes control

To operate the PTO in this mode the vehicle must meet the following conditions:

- Be in "park" position (vehicles equipped with automatic transmission)
- Upfitter provider (on/off) switch has been activated
- Parking brake applied (vehicles equipped with manual transmission)
- Clutch not depressed (clutch interlock switch)
- Vehicle must be running
- No transmission, engine, accelerator, brake or clutch switch faults present
- PTO must be correctly installed using the vehicle provided circuits

Various features provided by the Cummins module

Single Set Speed (sub set of remote PTO)

Single set speed allows the customer to set up the PTO to operate at a single idle speed. This speed is "remembered" through ignition cycles or battery disconnect. The set point can be changed unlimited times and in increments of 25 rpm's. These are the instructions to learn and unlearn Single Set Speed:

LEARNING SET SPEED

NOTE: This Feature Requires Engine Calibration Software released in December 2008:
If your vehicle was produced before December 2008, you must have the dealer "Reflash" the engine controller to December 2008 or later engine software.

In order for this feature to work the PTO MUST be wired as REMOTE PTO (pto switch between F425 and V937) not standard PTO.

- Key ON (Engine not running)
- Press and release Cruise SET button 5 times within 10 seconds
- Start Engine (Engine Running)
- Go into IDLEUP Mode (Cruise ON then SET to go to 900 RPM)
- Set the desired speed (using cruise switches)
- Press Cancel
- Turn key off (to save the setting)

UNLEARNING SET SPEED

- Key ON (Engine not run)
- Press and release Cruise Set button 5 times within 10 seconds.

Note: To LEARN a new speed, first UNLEARN the old speed

- Once the idle speed is LEARNED, the engine will go to that idle speed whenever the Remote PTO switch is turned on, without additional operator assistance.
- PTO will engage first and then the idle speed will ramp up to the LEARNED speed, thus not violating the AISIN requirement of not allowing PTO engagement above 1000 RPM.
- The LEARNED speed is saved at power down.

5 preset idle speeds (sub set of remote PTO)
This feature comes factory preset to the following 5 engine idle speeds 900, 1100, 1300, 1500, 1700 rpm's. They are attained by successively toggling the PTO switch on and off, by doing so the idle speeds will step through the preset speeds and will wrap back around to the beginning set speed if the on/off switch is toggled enough times. These set speeds can be changed to any speed between 900 and 2000 rpm's using a dealer service tool. This will give the customer the ability to have multiple idle speeds to operate his/her equipment.

Remote Throttle and Remote Throttle Switch
This feature allows the user of a continuously variable throttle. This throttle potentiometer is power by the 5 volt supply and sensor return lines provided.
This feature is activated when the Remote Throttle Switch is On (closed to ground) and the main throttle is closed. Remote Throttle does not require idle validation switches and is not to be used for main vehicle accelerator.

Accelerator interlock
This allows the accelerator to be locked out when activated. This feature is often used in conjunction with remote PTO or remote throttle. While active it disables the vehicles accelerator pedal typically for safety reasons.

Switched Max Operating Speed
This feature selects a lower maximum engine speed when the switch is On (closed to ground). The lowered engine speed is can be changed.

Switch Return
Electrical return/ground for switch circuits.

J1939 Interface
Cummins provides this interface to "gate" certain CAN messages for customer use. It is an industry standard three way connector located underhood. Messages included are vehicle speed, engine speed, park brake on/off, system voltage – filtered, brake switch status, clutch switch engaged, wait to start lamp status and coolant temp.

Stationary PTO/Remote PTO Calibrations:

Maximum Engine Torque
The engine torque will be limited to this value when PTO or Remote PTO is Active.

Maximum Vehicle Speed
The maximum vehicle speed allowed before deactivating PTO. Range 1-25 MPH.

Minimum Engine Speed
Defines the lower limit engine speed can be adjusted to when PTO/Remote PTO is active. The engine speed can be reached by either Ramp down or Bump down.

Maximum Engine Speed
Defines the upper limit engine speed can be adjusted to when PTO/Remote PTO is active. The engine speed can be reached by either Ramp up or Bump Up.

Engine Speed Ramp Rate
The ERPM/second change rate allowed during a ramp up or ramp down.

Idle Up Set Speed
Initial engine speed when Idle up is activated.

Number of Remote PTO Speed Settings
Total number of engine speed selections available to Remote PTO feature. Range 1-5.

Remote PTO Speed Setting 1, 2, 3, 4 and 5
Individual engine speed settings available to Remote PTO feature.

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Electrical Connection to the Vehicle

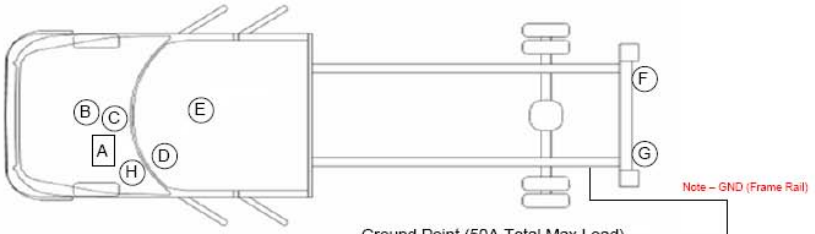
The vehicle wiring provides an easy access point to connect your PTO. There are two locations provided for ease of interface 1) is a 8 way connector located on the left side of the vehicle near the bell housing of the transmission and 2) is a connector located in the cab of the vehicle. These connectors contain the circuits required to integrate the PTO to the vehicles electrical system. The following chart is provided to assist in correctly interfacing the PTO with the vehicle:

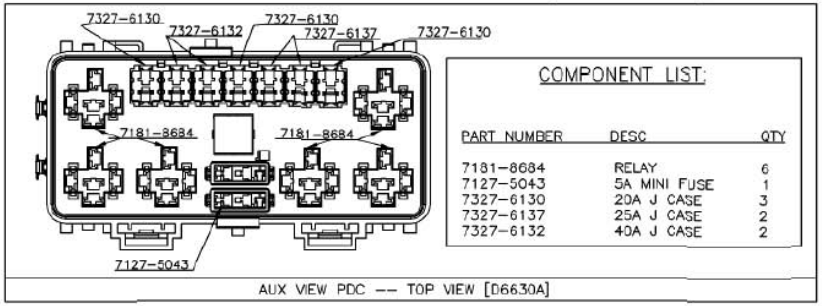
PTO Circuit Definition Chart

The following chart is provided to assist in correctly interfacing the PTO with the vehicle:

Circuit Name	Type/Gauge/Color	Circuit Functionality	Description	Usage
F856	18T - YL/PK	5V engine sensor feed	5 volt pwr supply to the remote potentiometer (remote's control power circuit). Supplied by the engine controller	Remote throttle control
K400	18T - BR/VT	accel pedal position sensor	Remote's ground (ground to the potentiometer of remote). Supplied by the engine controller. Do not hook to other grounding location	Remote throttle control
K128	18T - DB/LG	remote throttle signal	Remote signal sent to the engine controller. Signal from the remote's potentiometer.	Remote throttle control
K129	18T - DB	remote throttle switch	On/Off switch provided by customer to "turn on/off remote function. Remote switch closes to ground. Connect ground side of switch to pin #8 in this connector. **Do not ground to vehicle**.	Remote throttle control
K119	18T - LG/BK	maximum operating speed switch	Feature selects a lower maximum engine speed when switch is "on". Switch closes to ground. Customer supplied switch.Connect ground side of switch to pin #8 in this connector. **Do not ground to vehicle**.	Max operating speed switch
K810	18T - VT/DG	Accelerator interlock switch	Disable accelerator control of engine by closing an operator installed switch. This switch closes to ground. Connect ground side of switch to pin #8 in this connector. **Do not ground to vehicle**.	Customer supplied switch
F425	18T - PK	Remote PTO Switch	Customer supplied remote PTO on/off switch. Switch closes to ground. Connect ground side of switch to pin #8 in this connector. **Do not ground to vehicle**.	Remote PTO
V937	18T - VT/BR	PTO System Return (pin #8 ground)	Electrical ground for switch circuits. Ground returns to the engine controller. Do not hook to other grounding location. All customer supplied PTO switches ground to this pin. Please make appropriate protected splice.	Master ground for all added PTO switches. Do not apply any "dirty" grounds to this location.
K425	20T - OR/BR	Stationary PTO switch	Circuit switches to ground using operator installed switch. Connect ground side of switch to pin #8 in this connector. **Do not ground to vehicle**.	Stationary PTO

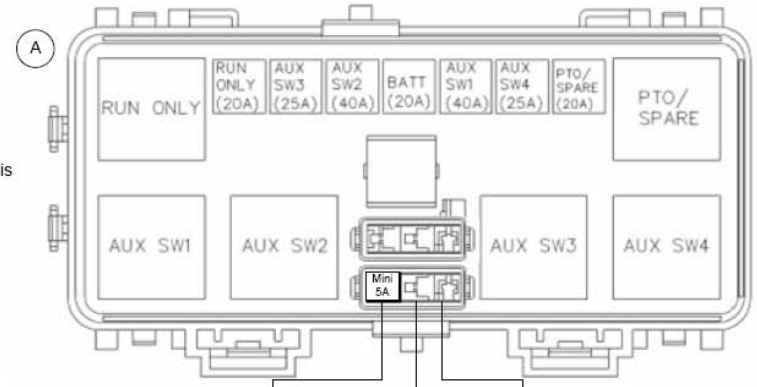
CAB CHASSIS UPFITTER SCHEMATIC





COMPONENT LIST:

PART NUMBER	DESC	QTY
7181-8684	RELAY	6
7127-5043	5A MINI FUSE	1
7327-6130	20A J CASE	3
7327-6137	25A J CASE	2
7327-6132	40A J CASE	2



Note –

Max Combined Fuse size allowed in box is 190A. Fuses can be relocated in box as necessary.

Max fuse size in any one location is 40A.

*The upfitter/customer is responsible for placing the correct fuse in the correct location depending on the actual load.
Amperages shown in schematics are for fuses/circuits as installed for the vehicle as sold and will change as fuses are reconfigured.

Date: May 21, 2012

2012 3500/4500/5500
RAM Truck Upfitter
Schematic

RAM

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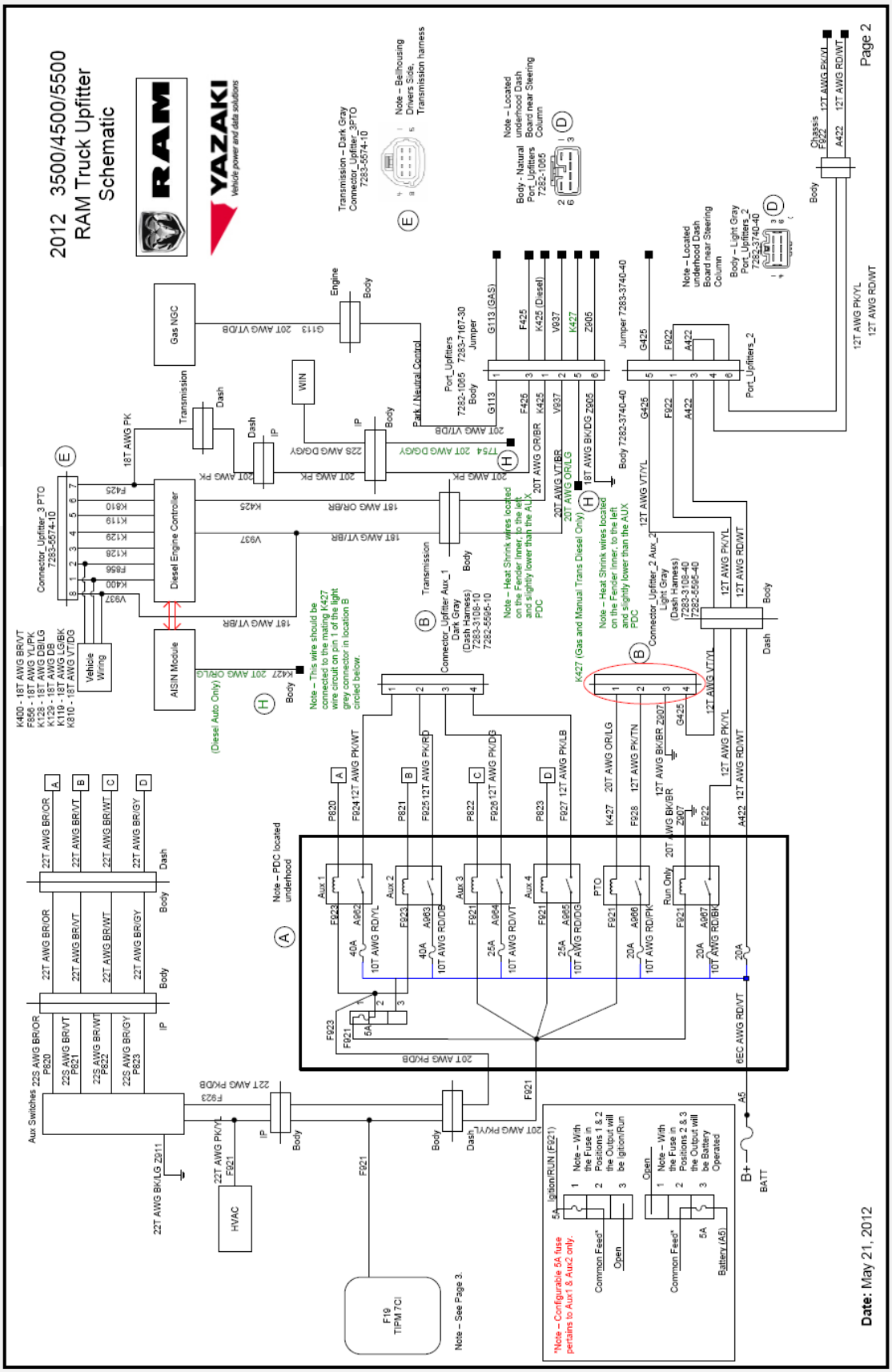
- A – Note – Auxiliary PDC Underhood (Dash Harness)
- B – Note – 2 Upfitter Connectors , Underhood (Dash Harness)
- C – Note – Heat Shrunk wires located in the Engine Compartment, to the right and slightly lower than the AUX PDC
- D – Note – Port Upfitters Connectors, Under Dash Board near Steering Column
- E – Note – PTO Connector Wires located Transmission BellHousing, Drivers Side
- F & G – Note – Vehicle Wiring, Heat Shrunk Rear of Frame
- H – Note – Heat Shrink wires located on the Fender Inner, to the left and slightly lower than the AUX PDC

5A Mini Fuse can be swapped between Battery and Ignition. This changes the function of AUX SW1 and AUX SW2 from Battery operated to Ignition/Run operated.


2012 3500/4500/5500
RAM Truck Upfitter
Schematic
RAM
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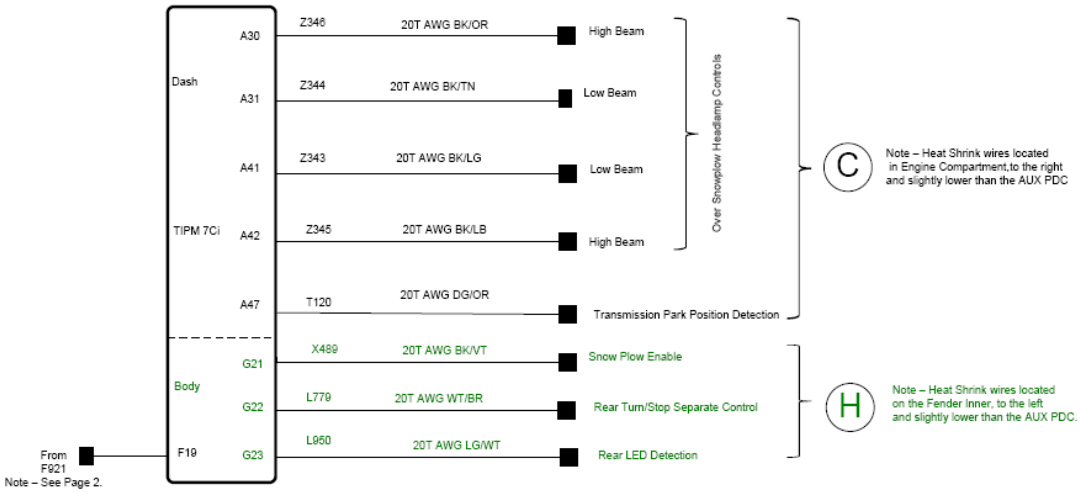
Page 2
Date: May 21, 2012
Diesel Engine Controller
Gas NGC
Engine
Transmission
Dash
Body
IP
WIN
Park / Neutral Control
Port_Upfitters
7283-7167-30
Jumper
Port_Upfitters_2
Jumper 7283-3740-40
Connector_Upfitter_3 PTO
7283-5574-10
Transmission – Dark Gray
Connector_Upfitter_3PTO
7283-5574-10
Note – Bellhousing
Drivers Side,
Transmission harness
Note – Located
underhood Dash
Board near Steering
Column
Body - Natural
Port_Upfitters
7282-1065
Body – Light Gray
Port_Upfitters_2
7283-3740-40
Chassis
Connector_Upfitter_2 Aux_2
Light Gray
(Dash Harness)
7283-3740-40
7282-6565-40
Connector_Upfitter Aux_1
Dark Gray
(Dash Harness)
7283-3108-10
7282-6565-10
Vehicle
Wiring
AIS/N Module
(Diesel Auto Only)
Note – This wire should be
connected to the mating K427
wire circuit on pin 1 of the light
grey connector in location B
circled below.
Note – Heat Shrink wires located
on the Fender Inner, to the left
and slightly lower than the AUX
PDC
K427 (Gas and Manual Trans Diesel Only)
Note – PDC located
underhood
Aux Switches
Aux 1
Aux 2
Aux 3
Aux 4
PTO
Run Only
HVAC
F19
TIPM 7CI
Note – See Page 3.
*Note – Configurable 5A fuse
pertains to Aux1 & Aux2 only.
Ignition/RUN (F921)
Common Feed*
Open
Battery (A5)
B+
BATT
Note – With
the Fuse in
Positions 1 & 2
the Output will
be Ignition/Run
Note – With
the Fuse in
Positions 2 & 3
the Output will
be Battery
Operated

2012 3500/4500/5500 RAM Truck Upfitter Schematic

RAM

YAZAKI Vehicle power and data solutions

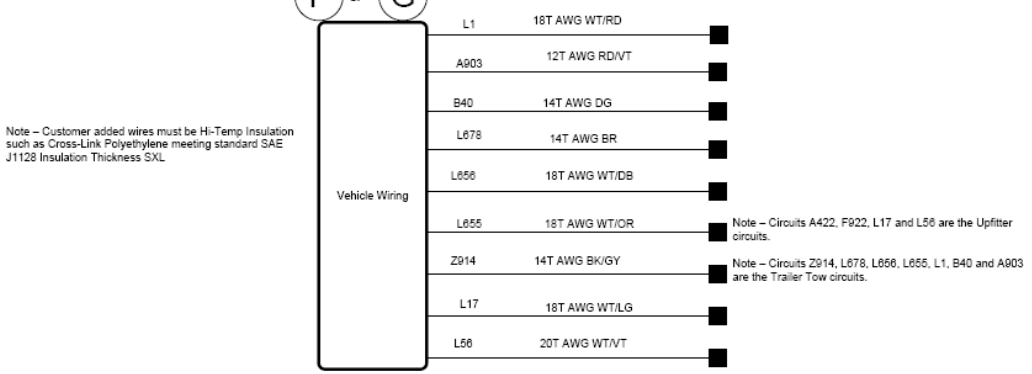
Upfitter Circuits



Trailer Tow and Upfitter Circuits

F & G

Note – Vehicle wiring, heat shrunk rear of chassis.



Note – Customer added wires must be Hi-Temp Insulation such as Cross-Link Polyethylene meeting standard SAE J1128 Insulation Thickness SXL

Note – Circuits A422, F922, L17 and L56 are the Upfitter circuits.

Note – Circuits Z914, L678, L656, L655, L1, B40 and A903 are the Trailer Tow circuits.

Date: May 21, 2012

2012 3500/4500/5500
RAM Truck Upfitter
Schematic

Upfitter Jumper
68049500AC

PTO Connector
7283-5574-10

(E)

1 K400 (ENG – ACCEL PEDAL POS SNSR RTN 2) 18T AWG BR/VT
2 F856 (ENG – 5V ENGINE SNSR FEED SEC 18T AWG YL/PK
3 K128 (ENG – REMOTE THROTTLE SWITCH SIGNAL 18T AWG DB/LG
4 K129 (ENG – REMOTE THROTTLE SWITCH 18T AWG DB
5 K119 (ENG – MAXIMUM OPERATING SPEED SWITCH) 18T AWG LG/BK
6 K810 (ENG – ACCELERATOR INTERLOCK SWITCH 18T AWG VT/DG
7 F425 (PWR – POWER TAKEOFF SWITCH) 18T AWG PK
8 V937 (SCS – SPEED CTRL SW RTN) 18T AWG VT/BR

Jumper
Port_Upfitters
7283-7167-30

(D)

1 K425 (DIESEL) 20T AWG OR/BR
3 F425 (PWR) 20T AWG PK
1 G113 (GAS) 20T AWG VT/DB
2 V937 (SCS – SPEED CTRL SW RTN) 20T AWG VT/BR
5 K427 (ENG – POWER TAKEOFF RELAY ENABLE) 20T AWG OR/LG
6 Z905 (GND) 18T AWG BK/DG

Dash – Dark Gray
Connector_Upfitter Aux_1
7283-3108-10
7282-5595-10

(B)

*Note – Each Circuit can handle 40A. Combined Load for AUX Switches is 130A
*the upfitter/customer is responsible for placing the correct fuse in the correct location depending on the actual load.

1 F924 (PWR – IGN FEED) (Output – 40A) 12T AWG PK/WT
2 F925 (PWR – IGN FEED) (Output - 40A)12T AWG PK/RD
3 F926 (PWR – BATT FEED) (Output - 25A)12T AWG PK/DG
4 F927 (PWR – BATT FEED) (Output - 25A)12T AWG PK/LB

Jumper
Port_Upfitters_2
7282-3740-40

(D)

6 G425 (GGS – POWER TAKEOFF SYSTEM STATUS BULB) 12T AWG VT/YL
1 F922 (PWR – IGN RUN 22) (Output – 20A) 12T AWG PK/YL
3 A422 (PWR – BATT FEED 12) 12T AWG RD/WT
4
6

Dash – Light Gray
Connector_Upfitter_2 Aux_2
7283-3108-40
7282-5595-40

(B)

1 K427 (ENG – POWER TAKEOFF RELAY ENABLE 20T AWG OR/LG
2 F928 (PWR – PTO 12V power output) (Output – 20A) 12T AWG PK/TN
3 Z907 (GND) 12T AWG BK/BR (40A)
4 G425 (GGS – POWER TAKEOFF SYSTEM STATUS BULB) 12T AWG VT/YL

Date: May 21, 2012

2012 3500/4500/5500
RAM Truck Upfitter
Schematic

RAM

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Circuit Definition

Ⓕ Trailer Tow Circuits

(Heat Shrunk Rear of Chassis/Frame)

Circuit	Gauge (AWG)	Color	Circuit Function
A903	12T	RD/VT	PWR
F40	14T	DG	ELT – Electric Brake Feed
L1	18T	WT/RD	ELT – Backup Lamps Feed
L655	18T	WT/OR	Trailer Tow Stop/Turn Lamp - Left
L656	18T	WT/DB	Trailer Tow Stop/Turn Lamp - Right
L678	14T	BR	ELT – Trailer Tow Park Lamp SIG
Z914	14T	BK/GY	GND

Ⓖ Upfitter Circuits

(Heat Shrunk Rear of Chassis/Frame)

*Note – Circuits A422 and F922 require the grey upfitter jumper in location 'D' to be installed to be active.

Circuit	Gauge (AWG)	Color	Circuit Function
A422	12T	RD/WT	PWR – Batt Feed
F922	12T	PK/YL	PWR - IGN Feed
L17	18T	WT/LG	ELT - Park/Tail/LIC/Running Lamps
L56	20T	WT/VT	ELT - Stop Lamp SIG/CHMSL Feed

Ⓒ Upfitter Circuits

(Heat Shrunk wires located in the Engine Compartment, to the right and slightly lower than the AUX PDC)

Circuit	Gauge (AWG)	Color	Circuit Function
Z346	20T	BK/OR	ELT - Headlamp High Beam RT
Z344	20T	BK/TN	ELT - Headlamp Low Beam RT
Z343	20T	BK/LG	ELT - Headlamp LO Beam LT
Z345	20T	BK/LB	ELT - Headlamp HI Beam LT
T120	20T	DB/OR	TRX - ATX-Park Position Detection

Ⓗ (Heat Shrink wires located on the Fender Inner, to the left and slightly lower than the AUX PDC)

L779	20T	WT/BR	Rear Turn/Stop Separate Control
L950	20T	LG/WT	Rear LED Detection
K427	20T	OR/LG	ENG - Power takeoff Relay Enable
T754	20T	DG/GY	Remote Start
X489	20T	BK/VT	AUD - Aux Connection Detect

2012 3500/4500/5500
RAM Truck Upfitter
Schematic

RAM

YAZAKI
Vehicle power and data solutions

Circuit Definition
PTO Connector and Pin Out
(Transmission Bellhousing, Driver's Side)

PTO Connector and Pin Out

1	K400 (ENG – ACCEL PEDAL POS SNSR RTN 2)	K400 - 18T AWG BR/VT	Diesel Engine Controller
2	F856 (ENG – 5V ENGINE SNSR FEED SEC	F856 - 18T AWG YL/PK	
3	K128 (ENG – REMOTE THROTTLE SWITCH SIGNAL	K128 - 18T AWG DB/LG	
4	K129 (ENG – REMOTE THROTTLE SWITCH	K129 - 18T AWG DB	
5	K119 (ENG – MAXIMUM OPERATING SPEED SWITCH)	K119 - 18T AWG LG/BK	
6	K810 (ENG – ACCELERATOR INTERLOCK SWITCH	K810 - 18T AWG VT/DG	
7	F425 (PWR – POWER TAKEOFF SWITCH)	18T AWG PK	
8	V937 (SCS – SPEED CTRL SW RTN)	18T AWG VT/BR	

Cab Chassis Upfitter Kit Detail

KIT PN 68049500AD

*Reference Sheet PN 68049873AD.
*1 Upfitter jumper PN 68049501AB:
a) 8 – 12 GA Circuits for AUX Connectors 1 & 2
b) 8 – 20 GA Circuits for the Transmission PTO Connector
c) 2 – Port Upfitter connectors with blank cut wires.

The Vehicle has been equipped to ease the insulation of a PTO by allowing convenient access to circuits needed without having to splice into the main harness. Two (2) of the upfitter connections are beneath the steering wheel near the engine compartment grommet (LT Side).

In the rear of the vehicle, you can find all required T-TOW circuits, and two (2) additional power circuits (1 Battery and 1 Ignition)

In the Engine compartment you will find two (2) (Light Grey and Dark Grey) Upfitter connectors which allow easy access to the switch bank and fuse box outputs, mating terminated circuits are included in the kit as needed.

On the upper left (driver's) side of the transmission you will find one (1) Upfitter connector which allows easy access to the PTO functions. Mating terminated circuits are included in the kit. Use as needed.

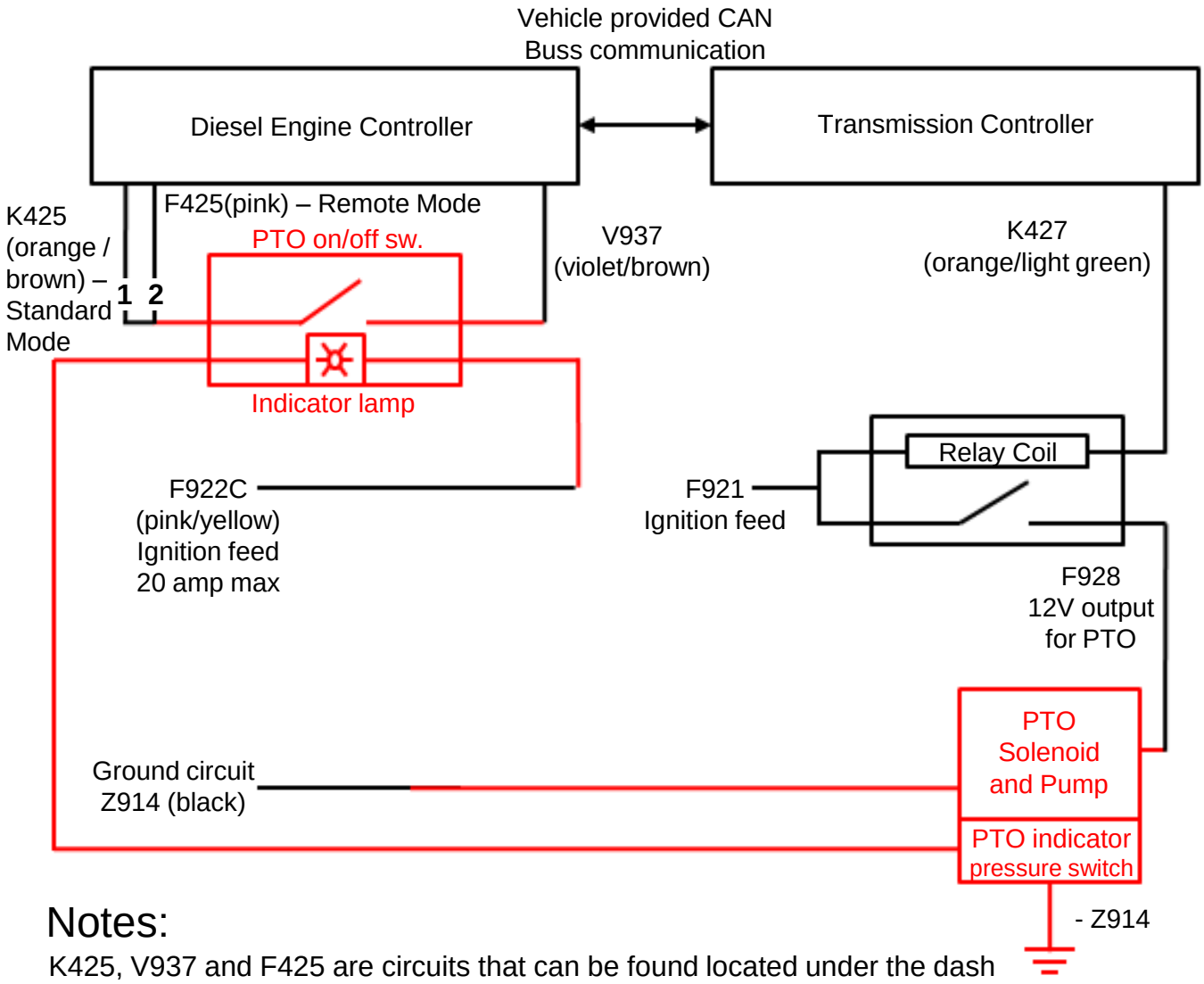
A J1939 connector has been provided. It is located in engine compartment (driver's side) on engine harness across from the battery. This will allow read only access to various vehicle Bus messages.

The Battery line to the AUX PDC is protected by a wire fuse link.

Warning about adding auxiliary batteries:
An auxilary battery may be used, However a battery isolation unit is not supplied and the auxiliary battery may discharge the truck battery when the engine is not running.

Ground Studs on the chassis/frame may be utilized as a grounding point with a 50A Maximum total load, see "Vehicle Ground Locations" section in the RAM Body Builder Guide, Electrical/Wiring Information.

6.7L Diesel with Aisin Automatic Transmission in Cab Stationary and Mobil Mode



Notes:

K425, V937 and F425 are circuits that can be found located under the dash just in board of the park brake pedal

F922C and Z914 can also be found in the same area

OPTION 1 Above - K425 is used for standard stationary & mobile modes.
OPTION 2 Above - F425 is used for single set speed

All other wiring, switches, relays and other components will need to be provided by the PTO installer. Anything in black comes with the truck

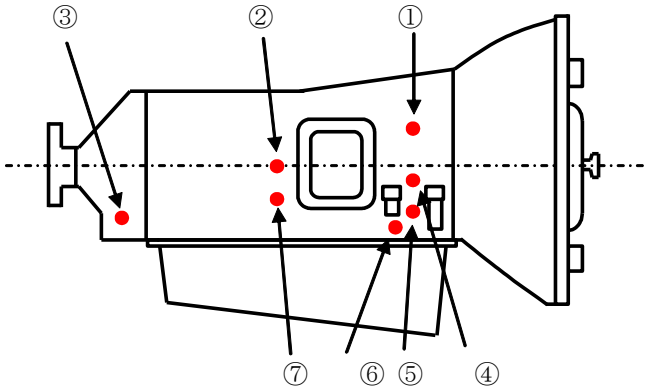
The PTO switch is assumed to be installed inside the cab

Do NOT externally ground circuit V937 to anything

Description of Pressure Ports for the Aisin Transmission. PTO Pressure Line to be connected only to #9 Line Main Pressure.

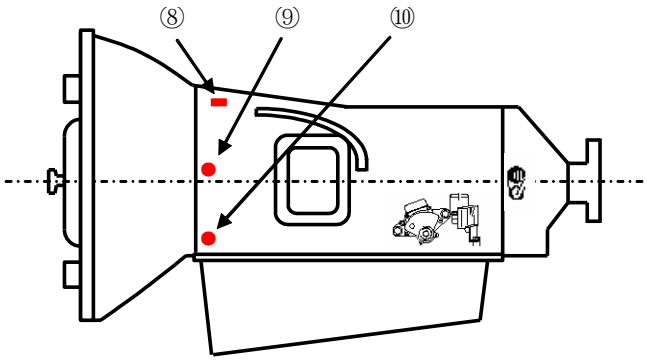
Location of the Pressure Plugs

Right Side View (Passenger Side)



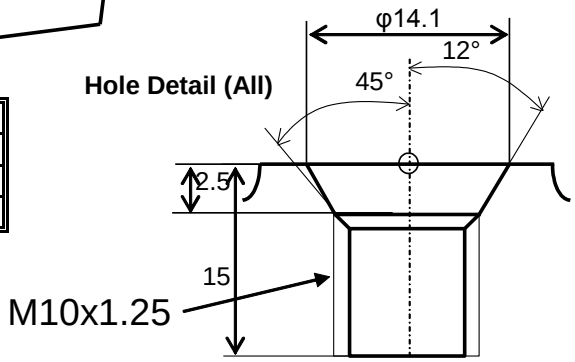
①	Torque Converter Out (to Cooler)	⑤	C1 (Clutch No1) Pressure
②	B1 (Brake No1) Pressure	⑥	C2 (Clutch No2) Pressure
③	B2 (Brake No2) Pressure	⑦	C3 (Clutch No3) Pressure
④	L/U (Lock Up Clutch) Pressure		

Left Side View (Driver Side)



⑧	Lubrication
⑨	Line (Main) Pressure
⑩	Torque Converter In (from Cooler)

Hole Detail (All)



PTO Installation Alternative

In addition to the current method of PTO installation from beneath the vehicle, an alternative method has been developed that allows the installation from above by removing the PTO patch panel in the floor. The instructions are as follows.

1. Remove the rear package tray located behind the seat from the vehicle.

2. Unbolt the seat and move it to the rear of the cabin where the package tray was removed.
3. Remove the sill guards (rocker panel covers) passenger side to allow the vinyl floor mat to be lifted. They are removed by prying straight up to disengage metal clips.

4. Lift the floor mat and fold it rearward and toward the drivers side to expose the patch panel

5. Remove the fasteners and sealer from around the patch panel. Cut away the sound deadener pad to expose the transmission PTO access.

6. You are now able to install and assemble the PTO and pump through the opening. Note: larger pumps must be inserted through the hole and moved toward the rear of the opening before installing the PTO. The pump is then slid forward to connect to the installed PTO.

7. To assemble, reverse the above procedure using RTV to reseal the PTO floor pan patch panel.